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Translation

PATENT COOPERATION TREATY

PCT/JP2003/000463



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PEB331	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP2003/000463	International filing date (day/month/year) 21 January 2003 (21.01.2003)	Priority date (day/month/year) 21 January 2002 (21.01.2002)
International Patent Classification (IPC) or national classification and IPC F04D 29/62, 29/24		
Applicant EBARA CORPORATION		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 7 sheets, including this cover sheet.  
  
☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
 These annexes consist of a total of 1 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 27 May 2003 (27.05.2003)	Date of completion of this report 06 February 2004 (06.02.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP2003/000463

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
 pages \_\_\_\_\_ 1-6 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
 pages \_\_\_\_\_ 4 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_ 1-3 \_\_\_\_\_, filed with the letter of 30 October 2003 (30.10.2003)
- ☒ the drawings:  
 pages \_\_\_\_\_ 1-6 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP2003/000463

## IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☒ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

See supplemental sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
- ☐ the parts relating to claims Nos. \_\_\_\_\_

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP 03/00463

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: IV. 3.

The feature shared by claim 1 and claim 3 is "an impeller provided with a disc-shaped main plate, blades joined to the aforementioned main plate, and a side plate having a suction port".

However, said common feature is a known feature not requiring prior art documents to be listed, and is not a novel feature (if necessary, see CD-ROM of the specification and drawings annexed to the Japanese Utility Model Application No. 067789/1993 (Laid-open No. 038694/1995), for example).

The aforementioned common feature does not make a contribution over prior art, and therefore does not constitute a special technical feature within the meaning of PCT Rule 13.2, second sentence.

There is therefore no common feature shared by all claims.

As there is no other common feature which may be considered to be a special technical feature within the meaning of PCT Rule 13.2, second sentence, there is no technical relation within the meaning of PCT Rule 13.2 linking these different inventions.

It is therefore obvious that claim 1 and claim 3 do not fulfill the requirement of unity of invention.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/JP 03/00463

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1 - 4	YES
	Claims		NO
Inventive step (IS)	Claims	2	YES
	Claims	1, 3, 4	NO
Industrial applicability (IA)	Claims	1 - 4	YES
	Claims		NO

### 2. Citations and explanations

Document 1: CD-ROM of the specification and drawings annexed to the Japanese Utility Model Application No. 67789/1993 (Laid-open No. 38694/1995) (Kawamoto Pump Mfg. Co., Ltd.), 14 July 1995

Document 2: JP 6-221299 A (Toshiba Corporation), 9 August 1994

Document 3: US 5234317 A1 (Ebara Corporation), 10 August 1993

Document 4: EP 0055426 A1 (Lowara S.p.A), 7 July 1982

Document 5: US 4363601 A1 (OY Nokia AB), 14 December 1982

Document 6: JP 7-19195 A (Kabushiki Kaisha Atago Seisakusho), 20 January 1995

#### Claims 1 and 4

Document 1 (fig. 2; entire text) and document 2 (fig. 4; paragraph [0018]) sets forth an impeller provided with a disc-shaped main plate, blades joined to the aforementioned main plate, and a side plate having a suction port, wherein a boss hole to attach a boss which engages with a pump shaft is formed at the center portion of the aforementioned main plate, and a step portion is formed, by drawing, on the periphery of the aforementioned boss hole formed on the main plate. In addition, it would

be obvious to a person skilled in the art that an impeller provided with such a shape would have a gap formed in such a manner that main plates would not come into contact with the step portion of the adjoining main plate when a plurality of main plates are disposed on top of one another.

In addition, it would be obvious to a person skilled in the art to apply the aforementioned impeller to the multi-stage pump set forth in document 3 (fig. 1) or document 4 (fig. 2).

#### Claim 2

Setting the gap to fall within the range of 0.3mm to 0.4mm in order that the main plates do not come into contact with the step portion of the adjoining main plate when a plurality of main plates are disposed on top of one another is not disclosed in any of the documents cited in the international search report, and would not be obvious to a person skilled in the art.

#### Claim 3

Document 5 (drawings) sets forth an impeller provided with a disc-shaped main plate, blades joined to the aforementioned main plate, and a side plate having a suction port, wherein the inner peripheral edge section of the aforementioned blades joined to the aforementioned main plate is rounded. It would be easy for a person skilled in the art to round the inner peripheral edge section in the vicinity of the area joined to the main plate.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP 03/00463

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The nature of the rounding specified by the wording "the area in the proximity of the part which comes into contact with the main plate is rounded" in claim 3 is unclear (where is the center of the radius of curvature, for example), therefore the invention set forth in claim 3 is unclear.

In addition, the technical cause and effect relationship between the invention set forth in claim 3 and the effect wherein "when punching out the blades from metal plate, no great load is applied to the part of the die which punches out the inner peripheral edge section" is unclear.